

ABSTRACT OF THE DISCLOSURE

A piezoelectric drive, and the rotor and/or pushers thereof, have long life, e. g. at least about 6000 hours of actual operation. The piezoelectric drive also is highly accurate, and is relatively inexpensive to make. The rotor friction surface and/or pushers are made from a material having a low mechanical quality factor, yet with high strength and stability under the conditions encountered in the ultrasonic fields typical of piezoelectric drives. The material is preferably a semi-crystalline thermoplastic polymer (e. g. polyarylamide) with filler (e. g. glass particles or fiberglass), e. g. about 30-60% polymer and about 40-70% filler, and can easily make injection molded components or parts or components. A pair of drives may be connected together to form an instrument, for example rotating a shaft connected to a pointer of analog instrument either clockwise or counterclockwise. Analog instruments, such as thermometers, barometers, speedometers, altimeters, pH meters, anemometers, etc., or other precision devices may utilize the piezoelectric drive. Alternatively, the piezoelectric drive may drive other mechanical devices such as gears, encoding locks, servo systems, point of purchase devices, micro pumps, clocks, timers, etc.